

**Policy for Addressing Ordnance and Explosives at Closed, Transferring,
and Transferred Ranges and Other Sites**

EPA Office of Solid Waste and Emergency Response (OSWER)

Federal Facilities Restoration and Reuse Office (FFRRO)

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Policy for Addressing Ordnance and Explosives on Closed, Transferring, and Transferred Ranges and Other Sites

EPA Office of Solid Waste and Emergency Response (OSWER) Federal Facilities Restoration and Reuse Office (FFRRO)

What is the purpose of EPA's Policy?

This policy provides direction to EPA Regional offices overseeing response actions involving ordnance and explosives (OE). OE consists of (1) ammunition, ammunition components, chemical or biological warfare material, and bulk explosives that have been abandoned, expelled from demolition pits or burning pads, discarded, buried, or fired. Such ammunition, ammunition components, and explosives are no longer under accountable record control of any DoD organization or activity. (2) Soil presenting reactivity or ignitability hazards due to the concentration of energetic materials present in the soil. (3) Buildings or structural materials contaminated with energetic material residues that present reactivity or ignitability hazards. This policy builds and elaborates on the joint DoD/EPA *Interim Final Management Principles for Implementing Response Actions at Closed, Transferring, and Transferred (CTT) Ranges* signed March 7, 2000. For the most part, this policy addresses situations where the U.S. Army Corps of Engineers (USACE) or a DoD service component will be conducting the response action as the lead agency and the regulatory agencies will be providing oversight. In addition, this policy is also applicable when EPA or other Federal agencies have the lead in the investigation and cleanup of OE. A companion document to this policy is EPA's draft *Handbook on the Management of Ordnance and Explosives at Closed, Transferring, and Transferred Ranges*. The draft Handbook supplements this policy by providing regulators and the interested public with more depth on the technical issues associated the cleanup of OE at CTT ranges. In addition, the draft Handbook also provides a common nomenclature to aid in the management of ordnance and explosives (OE), including unexploded ordnance (UXO), and to facilitate a common understanding of the state of art of OE detection and cleanup.

This policy is not meant to address OE at active and inactive ranges (except as noted below).

What do we know about the current situation in the United States?

At present, no official comprehensive inventory exists on the number of closed, transferred, and transferring (CTT) ranges and other sites (see Appendix for definition). However, according to the National Policy Dialogue on Military Munitions, Final Report, September 2000, "To date, DoD has identified approximately 1600 FUDS that are known or suspected to contain UXO, require further investigation to determine the potential for UXO..." DoD has confirmed that there are hundreds of CTT ranges and potentially several thousand sites across the nation. In terms of cost, the DoD Fiscal Year 2000 Agency-wide Financial Statement reflects a \$13.1 billion level of effort programmed until an inventory of all ranges is completed and regulatory requirements are finalized. However, a recent GAO study

concluded that because DoD does not have a complete inventory and has not used a consistent cost methodology, this amount cannot be relied upon and is likely significantly understated. GAO further stated that other DoD estimates show that its liability for training range cleanup could exceed \$100 billion.

Historically, millions of acres of former munitions ranges have been transferred from the military to non-Federal entities or other Federal agencies to be used for other purposes. DoD is currently working to further define the inventory of the sites and acreage that are potentially contaminated. Furthermore, active military installations and installations affected by the Base Realignment and Closure (BRAC) program may also have closed ranges and other sites contaminated with OE. Some of the sites are fairly small (e.g., small arms ranges, burial pits and trenches). Some may be dozens or even hundreds of square miles in area (bombing ranges). The actual and potential human health and environmental effects can vary from being fairly localized to being widespread. Although exact estimates do not presently exist, costs associated with the assessment and cleanup of these sites are expected to be significant.

These ranges or sites contaminated with OE may potentially have soil, groundwater, and surface water contamination, from munitions residues (including explosives and heavy metals, and at a small number of sites, chemical warfare agents), partially detonated and decomposing ordnance and explosives, open burning and open detonation (OB/OD) disposal activities, munitions burial sites, weapons testing and other military activities (such as training or research and development). **Of course, the detonation hazard from potential exposure to OE is likely to be the principal concern during initial response actions.**

This document is designed to provide direction to EPA Regions regarding the management of OE and implementation of response actions at CTT ranges and other sites. Among the issues addressed in this policy are:

- General regulatory authorities
- Use of CERCLA authorities
- Involvement of state and Tribal environmental regulators and the public
- Explosives safety principles
- Site characterization principles
- Transfer of ranges
- Land use and institutional controls
- Enforcement principles

What is the scope of EPA's Policy?

Response Actions

The response actions addressed by this policy include those actions conducted under the investigation and cleanup authorities of the Comprehensive Environmental Response, Compensation, and

Liability Act (CERCLA) and the corrective action authorities of the Resource Conservation and Recovery Act (RCRA). This policy also applies to enforcement and permitting actions where OE is involved.

Applicability to Closed, Transferred, and Transferring Ranges and Other Sites

This policy applies to former military ranges that have been closed by DoD or to ranges whose current or potential use or setting makes their use as ranges no longer acceptable (as determined by DoD). These include former ranges located on formerly used defense sites (FUDS), BRAC properties, and closed ranges on active installations. In addition, this policy applies to other hazardous waste sites where OE may be encountered (e.g., scrap yards, disposal pits, ammunition plants, DoD ammunition depots, OB/OD units, and research and testing facilities). For the purpose of this policy, the term “closed, transferring, and transferred (CTT) ranges and other sites” will be used to capture the situations to which this policy applies.

Applicability of Regulatory Authorities to Active and Inactive (A/I) Ranges

U.S. Military active and inactive ranges are generally beyond the scope of this policy, except in cases where a threat to human health or the environment exists due to off-range migration. EPA recognizes the vital role that active and inactive ranges hold in military training and readiness. Maintaining military readiness for protection of national security requires ongoing weapons testing and troop training activities. DoD generally addresses environmental issues at these ranges through its environmental compliance program. In fact, the RCRA Military Munitions Rule specifically excludes “recovery, collection, and on-range destruction of unexploded ordnance and munitions fragments during range clearance activities at active and inactive ranges” to facilitate DoD range management (environment, safety, readiness) activities (however, “on-range disposal or burial of unexploded ordnance and contaminants when the burial is not the result of product use” is not a readiness issue, was not excluded, and requires a RCRA permit.) EPA Regions are expected to use considerable discretion when considering taking or requiring the military to take any response actions involving active and inactive ranges. As a general rule, EPA Regions should defer to the Military Component relative to managing the risk from A/I ranges. Exceptions to this rule are cases where a threat to human health or the environment is posed or suspected by releases or the threat of release from these ranges generally by migrating off-range via surface water, ground water, or air, or by unauthorized access and removal of OE items. Even in these cases, extensive coordination with HQ EPA and the Military Component is recommended. When a Region believes that a response action is necessary at an A/I range, Regions should first consult with the Office of Solid Waste and Emergency Response’s (OSWER) Federal Facilities Restoration and Reuse Office (FFRRO), and the Office of Enforcement and Compliance Assurance’s Federal Facilities Enforcement Office (FFEO). However, nothing in this policy should be interpreted as affecting EPA’s existing response and enforcement authorities.

What are the general regulatory authorities that can be used?

Multiple regulatory authorities may govern response actions at CTT ranges. DoD and the Federal Land Managers generally prefer to use CERCLA as their authority for conducting responses at CTT ranges and other OE sites. However, this does not preclude EPA or another regulatory entity from using its other applicable authorities. Other applicable authorities include, but are not limited to, the following:

- Safe Drinking Water Act (SDWA, 1974, 42 U.S.C. §300f et seq.; 40 CFR Parts 141-149);
- Resource Conservation and Recovery Act (RCRA, 1976, 42 U.S.C. §6901 et seq.; 40 CFR Parts 240-282);
- Clean Water Act (CWA, 1972, 33 U.S.C. §1251; 40 CFR, Parts 100-136, 140, 230-233, 401-471, 501-503);
- Clean Air Act (CAA, 1970, 42 U.S.C. s/s 7401, 7412(r) and 7603;
- State Superfund Laws;
- State RCRA Programs;
- Other state or tribal hazardous waste management programs.

What about response actions using CERCLA authorities?

Consistency with CERCLA

EPA believes that OE *typically* meets the definition of a hazardous substance under CERCLA due to the characteristics of reactivity and ignitability. However, certain substances or materials associated with OE (e.g., scrap metal) may not be considered a hazardous substance—case-by-case review is imperative. Releases or threats of releases associated with OE should be evaluated in the same manner as any other CERCLA hazardous substance to see if the material present meets the CERCLA definition of a hazardous substance. Although some material associated with OE is not a hazardous substance (e.g., inert scrap), responses to OE should be evaluated on a site-specific basis to assure that human health and the environment are protected. Accordingly, EPA supports OE responses that comply with CERCLA, the National Contingency Plan (NCP), other appropriate Agency guidance (e.g., Data Quality Objectives (DQOs)), and the guidance provided in the DoD/EPA *Interim Final Management Principles for Implementing Response Actions at Closed, Transferring, and Transferred Ranges*. Where the DoD is conducting response actions under its Defense Environmental Restoration Program (DERP), those

response actions must be consistent with CERCLA, the NCP and use EPA policy and guidelines (see CERCLA Section 120, 10 U.S.C. 2701 et seq. (DERP), and Executive Order 12580). Consistency with the NCP and use of EPA policy and guidelines applies to every phase (e.g., removal, PA/SI, RI, FS, RD, RA, O&M). CERCLA section 120(a)(2) prohibits Federal Facilities from adopting or utilizing any guidelines, rules, regulations, and criteria applicable to CERCLA remedial actions that are inconsistent with EPA CERCLA remedial action requirements.

Use of Removal or Remedial Authorities Under CERCLA

Response actions should consider the full range of CERCLA authorities. Although public safety and worker safety (generally the primary risk posed by OE) is usually the most immediate consideration in determining what actions to take, not all situations in which OE is or may be encountered require immediate response actions. With regard to explosives safety considerations, EPA should give great weight and deference to military or qualified, trained contractor explosives or munitions emergency response specialists. Also, certain types of removal actions (emergency response and time-critical removals) may necessitate reduced levels of public and regulatory involvement. Other removal actions may lend themselves to strict compliance with applicable or relevant and appropriate requirements (ARARs), and evaluation of alternatives in advance of the need for immediate response. In such cases,

EPA should consider, among other things, the following factors when evaluating what kind of response action should be taken:

- Emergency removals should be used when an immediate or imminent and substantial danger to public health or the environment is present and action is needed within hours or days. These will generally be situations in which the military will have difficulty controlling potential exposures to OE and there are imminent threats to human health and the environment.
- Time-critical removals are actions that must be taken quickly and have a planning period of less than six months.
- Non-time-critical removals are adequate at many sites where access restrictions are in place.
- CTT ranges and other sites with extensive soil and groundwater contamination requiring complex cleanup decisions generally should be addressed by longer-term remedial actions.

Many sites will involve a combination of actions to achieve permanent remedies, for example:

- Time-critical removals to clear areas, erect access barriers such as fences, or otherwise prevent exposure to OE that are in close proximity to nearby populations posing an immediate threat.
- Non-time-critical removals involving surface and shallow subsurface clearance so that additional investigations (OE or hazardous waste) are facilitated.

- Remedial actions designed to achieve permanent remedies (including investigation and response) which concern issues related to land use, degree of subsurface clearance, type of remedy, use of institutional controls, or soil and groundwater remediation.

These examples are not meant to be all inclusive, nor are they meant to imply when a removal or remedial action should be taken. These are instead meant to illustrate responses that, when examined site specifically, may be appropriate.

Emergency Response Under RCRA or CERCLA

An “emergency response” generally refers to a situation in which there is an imminent and substantial threat to human health or the environment and actions should be taken within hours or days. The urgency of addressing a specific emergency with imminent risks may make timely coordination with regulators and/or the public difficult or impracticable. Given such circumstances, requirements under the applicable legal authorities for the Lead Agency to consult with regulators prior to taking a response action involving OE, do not apply (if DoD is the Lead Agency acting under the DERP. See DERP 2705(b)(2)). The RCRA Military Munitions Rule exempts explosives or munitions emergency or time critical responses from all regulatory requirements, including notifications, except that a record of the response must be kept. Some states, however, in adopting the Military Munitions Rule, have added a notification requirement. The Rule specifies that the explosives emergency response specialist is the one who determines if it is an emergency response situation. The preamble to the Military Munitions Rule states, that if, in the opinion of the explosives emergency response specialist, there is time for consultation with a regulatory authority it may not be a true emergency and DoD should so consult.

The determination by explosives emergency response specialists that there is a need for an emergency action is based on an “immediate, certain, and unacceptable risk to personnel, (public health both on and off-site) critical operations, facilities, or equipment.” This determination will, in most circumstances be a judgment call by the specialist, and may or may not be made in consultation with EPA, state or tribe, depending on the situation. Deference should be given to this judgment, but the EOD personnel should be able to describe and document afterwards the basis on which the determination was made. This response is appropriate for discrete emergency situations and should not be the default response applied to large expanses of uncharacterized range areas.

Removal Actions

The following should be noted when removal actions are being considered:

- Removal alternatives under CERCLA will be evaluated under the criteria set forth in the NCP (NCP Section 300.415).

- Removal actions shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action (NCP Section 300.415).
- In accordance with the NCP, the Lead Agency is required to seek EPA Regional, state, and local participation in the process (i.e., coordination), including comment on the cleanup alternative, with the exception of when an emergency precludes it (see DERP, for specific DoD requirements and the NCP Section 300.415). In addition, the Lead Agency is expected to coordinate and communicate with property owners and/or tenants, including civilian, Federal, state, tribal, and local government agencies.
- Explosives safety should always be the first factor considered in determining the best approach to the removal action.
- At the conclusion of a removal action an evaluation must be made regarding the need for further investigation and/or response. Since the decision is either a “no further action” or a remedial action decision, regulatory consultation is critical and, at NPL sites, the decision must be made with the concurrence of EPA.
- If DoD, in coordination with environmental regulators, determines, based on explosives safety, human health, and environmental concerns, and the *Interim Final Management Principles for Implementing Response Actions at Closed, Transferring, and Transferred (CTT) Ranges*, that the removal action will not fully address the threat posed and remedial action may be required, EPA should expect an orderly transition from removal to remedial response activities.

Remedial Cleanup Process

When the remedial cleanup process is used (which may include land use controls), remedies need to be evaluated against the CERCLA remedial Nine Criteria identified in the National Contingency Plan. Explosives safety considerations are usually handled first and can be effectively addressed under the following three NCP criteria: short-term effectiveness, implementability, and overall protection of human health and the environment. Explosives safety considerations may also involve evaluation of the “technical impracticability” waiver of “applicable or relevant and appropriate requirements” (ARARs). Under certain circumstances, complete OE clearance may not be possible for unrestricted use. Therefore, land use controls (LUCs) may have to be implemented. However, LUCs should generally not be the principal remedy component or the only remedy to ensure protectiveness (see Section on Land Use Controls of this Policy).

How are State and Tribal Environmental Regulators and the Public Involved?

Response Under RCRA and Other State Authorities [Reserved for state input]

Participation of State and Tribal Environmental Regulators

Participation of states and tribes in the evaluation and cleanup of OE sites is an important aspect in overall protection of human health and the environment. In many cases, a state or Indian tribe will be the lead regulator at an OE site. At a minimum, in recognition of their status as sovereigns and/or as co-regulators, state environmental regulatory agencies and Indian tribes should be:

- Provided with meaningful opportunities to participate in the response process along with the Lead Agency, for example, identification of ARARs.
- Provided with meaningful opportunities to participate in the development of and to comment on project documents prepared to support the response action.

Notification in the Case of Emergency Response

EPA expects that oral notification of the state or tribal governments should occur within 24 hours of initiating an emergency response, and written notification should occur within 7 days.

Public Involvement

In accordance with CERCLA and the NCP, and consistent with existing Agency, OSWER, Superfund, RCRA, and Federal facility policies, as well as DoD and DoD Component policies, public participation is essential to developing a sound, credible, and publicly acceptable response. Communication with all parties will help facilitate understanding and answer community concerns that the discovery or notification of OE often generates. Enhanced outreach will often be required to address public concerns, and efforts in this regard by the responsible Lead Agency should be encouraged. Also, at FUDS, which have been in the public/private domain for many years, public participation often results in the revelation of site-specific information pertinent or critical to the investigation, potentially resulting in efficiencies and cost savings.

Lead Agencies responsible for conducting and overseeing range response activities should take steps to identify and address the issues and concerns of all stakeholders. Public involvement programs related to the management of response actions on OE sites should be developed and implemented in accordance with applicable EPA policies. Such communication efforts should have the overall goal of ensuring that decisions made regarding response actions on OE sites reflect a broad spectrum of stakeholder input.

What about explosives safety considerations?

Safety Considerations Related to Response Actions

Several options exist for addressing OE. OE may be destroyed where it is found (called “blow in place”). OE may be consolidated at a safe, central area or to a controlled detonation chamber on-site and

destroyed (called “pick it up and carry it away” or “consolidated detonation”). The use of on-site “render safe” procedures to disable the munitions is considered for OE where it is unsafe to blow in place or pick up and carry away. Finally, OE can be transported off-site for disposal.

The major competing considerations concerning a disposal action are, (1) is the OE safe to move, (2) is the OE safe to transport off-site, or (3) can it be rendered safe for transport, and (4) is the current location safe to “blow in place.” These considerations affect the subsequent actions of whether to (1) blow in place, (2) move for consolidated detonation on-site, or (3) transport off-site for disposal.

- It is EPA’s policy that disposal actions include an evaluation of human health and environmental impacts, including explosives safety.
- Removal of munitions to another location for disposal is considered when the proximity of the OE to people, buildings, cultural resources, etc., makes blowing the ordnance in place an unacceptable hazard.
- Render-safe procedures are rarely considered acceptable by explosives safety experts. They may only be conducted by military explosive ordnance disposal technicians at significant personal risk given the condition of the ordnance, its potential instability, and the difficulty in discerning the condition of the fuses and whether the fuze is armed.

EPA staff overseeing range clearance have an independent responsibility to evaluate the environmental and public safety aspects of the planned response action. However, as a matter of policy (and a matter of law under RCRA), EPA generally defers to military or qualified, trained contractor explosives or munitions emergency response specialists on the safest approach to clear munitions. While EPA may generally support decisions made by explosives or munitions emergency response specialists on explosives safety issues, it is understood that decisions made by these specialists should not automatically be extrapolated over large expanses of ranges or other OE sites without sufficient justification.

EPA should generally give great weight and deference to the decisions of military or qualified, trained contractor explosives or munitions emergency response specialists at the field level unless there is clear and compelling reason to question the expert’s technical judgement in a given instance. Should EPA Regional field personnel believe there is a clear and compelling reason to question the technical judgment in a given instance, EPA staff and the Lead Agency counterparts immediately should consult with Regional management and the appropriate corresponding levels within the Lead Agency organization.

Site Safety and Health Plans (SSHPs)

SSHPs are prepared for every CERCLA action (investigation and response) and should be standard for OE responses even if not performed under CERCLA. There is a large body of DoD, USACE, and other service guidance concerning UXO safety that should be reflected in SSHPs. DoD policy requires that the plans must be reviewed and approved by appropriate EOD personnel prior to initiation of all site work,

except in emergency situations. In addition, given the public health and safety implications of OE investigations and clearance, SSHPs should be reviewed by regulators (EPA and/or the relevant state or tribe) prior to initiation of work. For more detail on explosives safety requirements, see Chapter 6 of the OE Handbook.

What are the site characterization principles?

Historical Documentation of Site Activities

Obtaining relevant historical information concerning a site is fundamental to planning an appropriate and thorough site characterization. Appropriate documentation includes interviews with personnel that were employed, stationed or otherwise would have direct knowledge of relevant activities, historical aerial photography, copies of the DoD Archive Search Reports, historical facility maps, construction drawings, shipping records, etc. Basically all information that can be used to identify potential OE locations, types and quantities of OE, and OE management methods. This information is used to:

- C Identify what types of ordnance were used at the facility and where they were used
- C Identify areas of the facility where ordnance may not have been used, thereby reducing that size of the area to be investigated
- C Prioritize the investigation in terms of likelihood of ordnance presence, type of ordnance used, public access to the area, and planned end uses
- C Consider the need to address explosives safety issues prior to initiating the investigation

Systematic Planning Process

As with any other environmental investigation, effective site characterization uses a Systematic Planning Process (SPP) to develop the goals of the investigation (i.e., the specific decisions to be made), identify the specific objectives of the investigation, and design an appropriate sampling and analysis effort. (Note: USACE uses an analogous process called Technical Project Planning or TPP, refer to USACE Engineering Manual EM 200-1-2 for more information on their process) Involvement of EPA or other regulatory (state and tribal) staff in the SPP process, from scoping through development of the sampling and analysis plan (SAP) and quality assurance project plan (QAPP) is imperative. This involvement will help ensure that the information from the sampling and analysis efforts provides data that are usable for the decisions to be made and that the involved regulators share a common understanding with the explosives emergency response specialist as to safety considerations.

EPA Review of Sampling and Analysis Plans (SAP) Under CERCLA

When investigations are conducted under CERCLA, SAPs must be prepared to ensure that the data obtained are of the quantity and quality necessary to support the decisions to be made. These SAPs will consist of two parts: (1) a field sampling plan that describes the number, type, and location of samples and the types of analyses, and (2) the Quality Assurance Project Plan (QAPP), which describes current organization, functional activities, and data quality objectives (DQOs) and actions necessary to achieve adequate data for use in selecting a remedy. NCP section 300.415 requires SAPs for CERCLA Non-Time Critical Removal Actions but not for emergency and Time Critical Removal Actions. SAPs must be reviewed and approved by EPA in accordance with NCP Section 300.430(b)(8)).

On a site-specific basis, where EPA is performing oversight, the party conducting the response action and EPA need to reach agreement on standards and procedures for characterization at OE sites. Most critical is agreement on DQOs for site characterization efforts at OE sites. DQOs, once established, will guide site characterization planning, sampling method selection, analytical technique selection, and the level of uncertainty that is acceptable for decision-making purposes.

Investigations should not be limited to within the “fence line,” especially when information suggests that OE contamination/exposure problems are more extensive. The site is defined by the extent and location of contamination, not the “fence line.”

Maintenance of a Permanent Geophysical Record of the Investigation

To the maximum extent practicable, a permanent geophysical record of the data gathered to characterize a site should be developed and maintained by the Lead Agency. To the maximum extent practicable, this record should include methods that log the data via computer and electronically locate (via satellite or other accurate means) each object or potential OE item (i.e., geophysical anomaly). These are referred to as “digitally recorded and geo-referenced” methods. Exceptions to the collection of geophysical data should be limited primarily to emergency response actions or cases where such electronic record is impracticable. The permanent record shall be included in the administrative record. In addition, this information should be provided, in its entirety, to Federal and state regulators, Federal Land Managers, and tribes, at their request.

Integration of Site Safety, OE, and Environmental Investigations

The most effective approach to site characterization integrates safety considerations, OE geophysical investigations, and chemical investigations for other environmental contamination. Such integration has been demonstrated in the field to be safer and more cost-effective since it typically eliminates duplication of efforts (e.g., separate explosives safety efforts for either OE or other environmental contamination). For example, following the initial review of existing information and a visual reconnaissance of the range, a surface clearance of OE may be necessary to address the immediate explosives safety concerns. A next step may be the use

of a subsurface geophysical method, which may be necessary to map the site for potential OE under the surface. The clearance activities, when properly planned, executed, and recorded, can provide valuable information regarding the subsurface distribution of OE and can help guide the geophysical investigations. If soil or groundwater sampling is needed to determine the nature and extent of soil and/or groundwater contamination, special procedures may be put in place for obtaining core samples. It should be noted, however, that in some instances it may be necessary to modify a site investigation strategy due to explosives safety concerns.

Information on Statistical Sampling

For information on statistical sampling, see FFRRO's January 19, 2001, memorandum *Interim Guidance on the Use of SiteStats/GridStats and Other Army Corps of Engineers Statistical Techniques Used to Characterize Military Ranges*, and the EPA National Exposure Research Lab's review of Corps of Engineers Statistical Sampling Methodologies, including SiteStats/GridStats, the Hopkins-like statistic, and UXO Calculator.

Use of Alternative Detection Techniques

Recent technological improvements have created better detection techniques than were used in the past. Historically, range characterization has relied on a set of techniques referred to as “mag and flag” to detect and define OE. “Mag and flag” involves an operator responding to audible or visual signals representing anomalies as detected by a hand-held magnetometer (or similar device), and placing flags into the ground corresponding the locations where signals were produced. These techniques have significant weaknesses that can lead to high levels of either false positives or false negatives. “False positives” are anomalous items incorrectly identified as ordnance. “False negatives” are ordnance items incorrectly identified as non-ordnance, resulting in potential risks remaining in the ground.

Alternatives to the mag and flag techniques to detect OE should be used wherever possible. Recently, major improvements have been achieved in the technologies used to detect OE. As stated in the *DoD/EPA Interim Final Management Principles for Implementing Response Actions at Closed, Transferring, and Transferred (CTT) Ranges*, to the maximum extent practicable, digitally-recorded and geo-referenced sensor data shall be collected and analyzed, and a permanent record of the sensor data and clearance results kept. The most appropriate and effective detection technologies at a given site will depend on the technology's capabilities in relation to site-specific factors such a munitions types, shapes, materials, mass, size, depth, extent of clutter, and environmental factors (e.g. soil, geology, terrain, vegetation, moisture, and temperature.) The primary selection criteria is the ability to maximize the probability to detect an ordnance item, but also important is the ability to minimize the probability of false alarms and to discriminate ordnance from non-ordnance items. Often, these determinations are made by applying the performance results from controlled tests and experiences at other similar sites, supplemented by site-specific prove-outs. As more and more prove-outs and other performance tests are documented, the need for site-specific prove-outs will decrease. Site-specific performances are verified by quality control checks during excavations, and

sometimes by measuring the ability to detect munitions seeded in the remedial area prior to the geophysical investigation. EPA believes that in most situations nationwide, the use of these newer technologies and procedures will significantly increase the amount of OE detected, better distinguish between OE and non-OE items, reduce the number of false positives, and significantly reduce the total investigative and remedial costs (fewer false positive digs). The digitally recorded, geo-referenced permanent record not only enables a better analysis of the data, but also enables re-analysis of the data, facilitates and enables a more accurate evaluation of the “goodness” of the investigation and remediation (important for regulatory oversight and increased confidence in land use decisions), and provides a data base for initiating future investigations should ordnance items surface in the future. Some of these techniques are described in the draft *Handbook on the Management of Ordnance and Explosives at Closed, Transferred, and Transferring Ranges*.

What is EPA’s policy towards transferring ranges?

Generally, EPA maintains that the Federal Government should retain ownership or control of those areas at which it has not yet assessed or responded to potential explosives hazards. Nonetheless, it is possible for property to be transferred prior to the initiation or completion of a response action at a closed range. Where Federal property known or suspected of containing OE is proposed for transfer by lease or deed, evaluation of the risk associated with OE must be part of the Environmental Baseline Survey, the Finding of Suitability for Lease, the Finding of Suitability for Transfer, or comparable process for non-BRAC transfers. EPA will support the leasing of property with adequate disclosure and appropriate access control mechanisms to ensure protection of human health and the environment. Prior to transfer by deed, the requirements of Section 120(h)(3) of CERCLA must be met requiring either that the CERCLA covenant (all necessary remedial action has been taken) be given, or that it be deferred by EPA and/or the Governor. Where OE is known or suspected to remain on the property, land use restrictions should be incorporated into an enforceable mechanism which will bind subsequent property owners and should be monitored by the Federal agency with periodic reports to the regulatory agency(-ies). Where Federal property is being transferred with known or suspected OE, EPA believes all areas need to be evaluated in the CERCLA (including section 120(h)(3)) and the NCP context.

What about land use controls?

Early Discussions of Land Use

Discussions with local land use planning authorities, local officials, and the public, as appropriate, should be conducted as early as possible in the remedy selection process to determine the reasonably anticipated future land use. These discussions should be used to scope efforts to characterize the site, conduct risk assessments, and select the appropriate responses. Generally speaking, for response actions on former ranges that are being or will be used for residential use, sufficient information should be provided to all stakeholders to enable them to conclude that the land is suitable for unrestricted use. The general goal is to identify and apply the best means to investigate the range and address the OE such that the actual use of the property is consistent with the reasonably anticipated future land use. In achieving this goal, EPA fully

supports identification and application of the best demonstrated available technology (-ies) for OE detection and remediation. Although a response goal of 100 percent remediation may be sought, current OE technologies may not be able to achieve this goal.

Use and Evaluation of Land Use Controls (LUC) at OE sites

Land Use Controls (LUC) include any type of physical, legal (institutional), or administrative mechanism that restricts the use of, or limits the access to, real property to prevent exposure to hazardous conditions that may pose a risk to human health and the environment. LUCs generally should not be the principal or sole remedial action at a OE sites and should not substitute for more active or permanent measures. The determination of the appropriate response actions, to include the establishment of LUCs should be based on the planned reuse and specific requirement of each property. Where employed, LUCs must be adequately defined, roles and responsibilities for the LUCs should be made clear, and the LUCs must be enforceable.

Because of technical limitations, inordinately high costs, and other reasons, complete clearance of OE sites to the degree that allows certain uses, particularly unrestricted use, may not be possible. In almost all cases, LUCs will be necessary to ensure the protection of human health and safety. LUCs at OE sites should be identified and implemented early in the response process to provide protectiveness. When supported by a site characterization that includes an adequate evaluation of reasonably anticipated future land uses, final LUCs should be considered during the process of developing and evaluating response alternatives, using the nine remedy selection criteria established under CERCLA regulations (i.e. NCP section 300.430). This will ensure that LUCs are chosen as remedial actions based on a detailed analysis of response alternatives and are not presumptively selected. Roles and responsibilities for monitoring, reporting, and enforcing the restrictions should be clear to all affected parties. LUCs should be clearly defined, set forth in a decision document, and be enforceable to be effective.

When complete OE clearance is not possible at transferred ranges to allow for unrestricted use, the Lead Agency should notify the current landowners and appropriate local authorities of the potential presence of an explosives hazard and should institute an appropriate public education program. The Lead Agency is expected to work with the appropriate state and local authorities to implement additional LUCs in situations where they are necessary to ensure protectiveness. State laws will be applicable to most LUCs especially the requirements for deed restrictions and easements.

The Lead Agency should monitor the selected remedy to ensure long-term effectiveness of the response, including any LUCs. The five-year review allows for evaluation and application of new technology for addressing technical impracticability determinations, and to enhance previous response actions including those where, due to technical or cost considerations, a decision was made not to pursue an active response (see CERCLA section 121(c)).

To expedite the property transfer process, the Lead Agency should work with state regulators and the community to evaluate LUCs while selecting the response action. The Lead Agency should then provide timely notice to prospective land owners/managers of the intent to use LUCs. Comments received during the development of draft documents should be considered and incorporated into the final LUCs, as appropriate. For BRAC properties, any unresolved regulatory comments should be included as attachments to the Finding of Suitability to Transfer (FOST). Where the military is performing the response action at FUDS, the assistance of Federal, state, and/or local regulators may be needed to impose land use controls on private or Federally-owned property.

What about the enforcement principles?

Oversight by Regulators

Regulatory oversight and involvement in all phases of OE site investigations is crucial to an effective response, as it increases the credibility of the response and promotes public acceptance. Such involvement includes timely coordination between the Lead Agency and EPA, state, or tribal regulators, and, where appropriate, the negotiation and execution of enforceable site-specific agreements. Specific enforcement questions should be directed to the Federal Facilities Enforcement Office (FFEO) or the Office of Site Remediation Enforcement (OSRE) in the Office of Enforcement and Compliance Assurance (OECA).

EPA, states, or tribal government regulators should conduct regulatory oversight at all OE sites where response actions are being conducted. The Lead Agency and appropriate environmental regulator, should try to reach a consensus as to the level of oversight necessary to achieve consistent protection of human health and the environment. The level of external oversight by regulators will depend on factors including, but not limited to, the nature and extent of environmental contamination or hazard at a site.

Negotiated Agreements: Federal Facility or Interagency Agreements

If the OE site is on the National Priorities List (NPL), the schedule for investigation and cleanup of the CTT range must be part of the required Federal Facility Agreement (FFA) or Interagency Agreement (IAG) (see CERCLA section 120(e)(4)(B)).

Negotiated agreements under CERCLA and other authorities play a critical role both in setting priorities for range investigations and responses and in providing a means to balance interdependent roles and responsibilities. Enforceable agreements provide a good vehicle for setting priorities and establishing a productive framework to achieve common goals. To achieve these goals, negotiated cleanup agreements should be developed in consideration of OE hazards, land use, and other factors including cost. Where range investigations and responses are occurring, the Lead Agency and the regulator(s) should attempt to reach a consensus on whether an enforceable agreement is appropriate. Examples of situations in which an enforceable agreement might be desirable include sites where there is a high level of public concern or where there is potential for significant exposure.

Treatment of non-NPL, privately owned Formerly Used Defense Sites (FUDS)

Consistent with the draft EPA FUDS policy, privately owned non-NPL FUDS will generally be treated in the same manner as other privately owned sites. When EPA is conducting the oversight at FUDS, EPA should focus on negotiating orders to conduct work with the parties responsible for releases of hazardous substances, including DoD, consistent with existing enforcement and cleanup policies.

To facilitate cleanup by responsible parties, and consistent with enforcement priorities, Regions should initiate PRP searches at FUDS early in the CERCLA process where parties other than DoD may be liable for releases of hazardous substances. In addition, EPA may issue unilateral orders to compel cleanup by any or all of the responsible parties under an appropriate enforcement authority, including, but not limited to, CERCLA, RCRA or the SDWA, or where EPA determines that a site may present an imminent and substantial endangerment. Cleanup orders should include schedules for response action(s) that EPA determines to be needed, based on the site-specific situation and nature of the contamination. In appropriate situations, EPA may implement CERCLA response actions at FUDS, as needed, to address releases and threats of releases of hazardous substances and proceed with cost recovery actions.

It is EPA's expectation that states or tribes will serve as the primary regulatory oversight agency at most non-NPL FUDS, however, some circumstances may warrant involvement of EPA.

Dispute Resolution

To avoid or to resolve disputes concerning the investigations, selected remedies, or response actions at OE sites, Lead Agency, EPA, and state or tribal organization should come together and attempt to reach consensus, each giving substantial deference to the expertise of the other party or parties. Within any dispute resolution process, the parties should give great weight and deference to explosives safety experts on explosives safety issues.

- At NPL sites, disputes that cannot be mutually resolved at the field or Project Manager level should be elevated for disposition through the tiered process negotiated between DoD and EPA as part of the interagency agreement for the site, based on the Model Federal Facility Agreement provisions. Where an agreement does not already exist, or where an existing Federal Facility Agreement (FFA) does not cover CTT ranges within the NPL site, EPA Regions will develop pursuant to CERCLA Section 120 and appropriate Federal Facility Agreement or propose to amend the existing agreement to cover the CTT ranges within the NPL site by the beginning of the next FFA amendment cycle, or next fiscal year, whichever is earlier.
- At non-NPL sites where there are negotiated agreements, disputes that cannot be mutually resolved at the field or Project Manager level also should be elevated for disposition through a tiered process set forth in the site-specific agreement.

- At non-NPL sites without a negotiated agreement, dispute processes are negotiated on a site-specific basis.
- While EPA supports consultation with regulators, an enforceable agreement requirement for DoD to consult regulators prior to taking a response action involving OE, “does not apply if the action is an emergency removal taken because of imminent and substantial endangerment to human health and the environment and consultation would be impracticable” [DERP 2705(b)(2)]. To the extent feasible, enforceable agreements should allow for emergency responses. Language that allows for an emergency response to a nonspecified incident, with later notification and documentation to regulators, is encouraged. (An example of such language is the EPA Region III “Former Nansmond Ordnance Depot Site, Suffolk, Virginia, Interagency Agreement to Perform a Time Critical Removal Action for Ordnance and Explosives Safety Hazards.”)

Enforcement

When necessary, EPA will take enforcement actions against responsible parties, however, EPA should focus on negotiating agreements or orders to conduct the required work prior to unilaterally issuing an order. If EPA determines that a site poses an imminent and substantial endangerment and the responsible parties disagree with EPA’s determination regarding the need for schedules or response action(s), then an enforcement order based on the nature of the contamination and site-specific situation would be appropriate. EPA may issue an enforcement order to compel cleanup by any or all responsible parties under an appropriate enforcement authority, including, but not limited to, CERCLA, RCRA, or the SDWA. In appropriate situations, EPA may execute a response action as needed to abate imminent and substantial and other threats and proceed with cost recovery actions.

Policy Disclaimer:

This interpretive policy is intended solely to provide information to governmental officials involved particularly in Superfund and RCRA corrective action cleanups. While this document may assist the industry, public, and Federal, state, and tribal regulators in applying statutory and regulatory requirements, particularly those of CERCLA and RCRA, it is not a substitute for those legal requirements, nor is it a regulation itself. Thus, it does not impose legally binding requirements on any party, including EPA, states, tribes, or the regulated community.

APPENDIX

KEY TERMS THAT DEFINE SCOPE

Key Terms That Define Scope

Active or Inactive (A/IA) Range: An active or inactive range is a range on which a military service is conducting training or munitions testing or may do so in the future. In general, such ranges serve only this purpose, as other uses would be incompatible with the potential explosives safety threat such ranges pose.

Closed, Transferred, or Transferring (CTT) Range: Refers to former military ranges that are not used and will not be used in the future for military training, munitions testing, or other similar activities.

- (1) A **closed range** is a range that has been taken out of service and either has been put to new uses that are incompatible with range activities or is not considered by the military to be a potential range area.
- (2) For the purposes of this policy, a **transferred range** is a closed range that has been transferred from DoD ownership to other Federal agencies, state, tribal, or local agencies, or private entities (e.g., formerly used defense sites, or FUDS).
- (3) A **transferring range** is a range in the process of being transferred from DoD ownership (e.g., sites that are at facilities closing under the Base Realignment and Closure Act, or BRAC).

Explosives or Munitions Emergency Response Specialist: This term refers to an individual trained in chemical or conventional munitions or explosives handling, transportation, render-safe procedures, or destruction techniques. Explosives or munitions emergency response specialists include DoD emergency ordnance disposal (EOD) personnel, technical escort unit (TEU) personnel, and DoD-certified civilian or contractor personnel, and other Federal, state, or local government personnel similarly trained in explosives or munitions emergency response (40 CFR Part 260.10, “Definitions”).

Lead Agency: The agency that provides the OSC/RPM to plan and implement response actions under the NCP. The lead agency under CERCLA could be EPA, a Military Department, the U.S. Army Corps of Engineers, other Federal Agency, etc.

Ordnance and Explosives (OE): Consists of the following:

- (1) Ammunition, ammunition components, chemical or biological warfare material or explosives that have been abandoned, expelled from demolition pits or burning pads, lost, discarded, buried, or fired. Such ammunition, ammunition components, and explosives are no longer under accountable record of any DoD organization or activity. (HQDS Policy Memorandum “Explosives Safety Policy for Real Property Containing Conventional OE.”)
- (2) Explosive soil. (U.S. Army Corps of Engineers, EP1110-1-18, Ordnance and Explosives Response, April 24, 2000.)

The term OE is used in this policy in a general sense to include all of the above including UXO.

Other Sites: The term “other sites,” as used in this document, refers to other hazardous waste sites where OE may be encountered (e.g., scrap yards, ammunition plants, DoD ammunition depots, buried munitions, open burning/open detonation (OB/OD) units, research/testing facilities, and former DoD properties).

Range: Any land mass or water body that is or was used for the conduct of training, research, development testing, or evaluation of military munitions or explosives.

Unexploded Ordnance (UXO): This policy will use the term “UXO” as defined in the Military Munitions Rule. “Unexploded Ordnance (UXO) means military munitions that have been primed, fused, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation personnel, or material and remain unexploded either by malfunction, design, or any other cause.” This definition also covers all ordnance-related items (e.g., fragments) existing on a CTT range. [40 CFR, Part 260.10, 62 FR 6622, February 12, 1997].